which is scarcely conveyed by the title selected for it; it might have been more appropriately entitled "The Practical Uses of Coal Scientifically Considered," for the author reviews in it the technical applications of coal, whilst, to use his own words, he has "consistently endeavoured throughout to give due prominence to the underlying scientific principles." It need scarcely be said that the work is extremely well done, as might, indeed, be expected from the high reputation that the author has deservedly won in this particular field of labour. Necessarily it contains no really new matter, but gives a clear, accurate, and concise summary of the present state of knowledge regarding the nature and chemical composition of coal, the various changes that it undergoes on heating, and more especially the phenomena associated with its combustion. The use of coal as the source of a wide range of chemical compounds, which form the basis of a vast number of dyes and drugs, is barely touched upon, the author's attention being mainly concentrated upon coal as a source of energy; it is scarcely necessary to add that the utilisation of the by-products that can be simultaneously obtained nevertheless receives due consideration, although the elaboration of these by-products is not followed beyond the earliest stages.

The first third of the volume is taken up with an account of the chemical composition of coal in the light of modern research. Prof. Bone has made good use of the vast mass of material accumulated by previous workers on this subject; it is perhaps to be regretted that the work was completed just before the issue of the important monograph of Drs. Marie Stopes and Wheeler on this subject, so that Prof. Bone did not have the advantage of seeing the most recent views of these writers. Upon the whole, however, Prof. Bone inclines to endorse the views already put forward by Dr. Wheeler in his previous work, whilst admitting that there still remain many obscure points that need to be cleared up. The brief summary of the present state of our knowledge on pp. 126 *et seq.* may be instanced as an excellent example of the author's power of presenting a highly complex subject briefly and lucidly. The next few chapters are devoted to the principles underlying the combustion of coal and their applications to industrial and domestic heating, including the abatement of smoke. Next in order come the carbonisation of coal under various conditions, and the complete gasification of coal for the generation of producer-gas and water-gas. Finally, the important problems of fuel economy in the manufacture of iron and steel, and those connected with the employment of coal for the production of power, are considered. The last chapter is one on surface combustion, which, interesting though it is, does not really fit in well with the general scheme of the book.

In a work covering so wide a range, it is inevitable that all sections cannot be treated as fully as each reader might desire, though it is only fair to point out that the author can scarcely be blamed for this; his difficulty would, indeed, be to compress rather than to expand each portion. Thus it may perhaps be suggested that not enough weight is laid upon direct firing by coal-dust, a method that ought to be capable of the fullest possible utilisation of the thermal energy of the fuel. The possibility of employing the explosive force of a mixture of finely divided coal and air in some form of explosion engine has already occupied seriously the attention of various inventors, and although the difficulties presented are very great, it would be very rash to consider the problem as insoluble. In this way it should be possible to utilise the whole of the mechanical energy developed by the combustion of coal, less, of course, the amount necessarily absorbed in pulverising the coal; if much less is lost in this way than in gasifying coal, the advantages presented are obvious, and it might therefore fairly be suggested that Prof. Bone might have devoted a little more space to the problems affecting the combustion of coal-dust.

One of the most valuable sections of the book is that relating to the possible economies attainable in the manufacture of steel; Prof. Bone is undoubtedly right when he states that the reason why British ironmasters work on less economical lines in this respect than their Continental rivals is because most British ironworks were built at a much earlier date, before modern methods of steel manufacture had been devised, and that it takes time to remodel these older works and to bring them up to modern requirements. British ironmasters have always been fully alive to the need for fuel economy; in this connection it is curious to note that Prof. Bone has overlooked the early experiments of Mr. Charles Cochrane upon drying the blast supplied to the blast-furnace; these long antedated Gayley's work at Pittsburgh, which is fully discussed here.

Taking the book as a whole, Prof. Bone may fairly be congratulated upon having produced a very valuable work upon a very difficult subject, a work which is likely to be of great assistance to every one of the vast army of the industrial users of coal, and to remain a standard work upon the subject for many years to come.

H. L.

CATALOGUE OF SCIENTIFIC PAPERS.

Catalogue of Scientific Papers, Fourth Series (1884–1900). Compiled by the Royal Society of London. Vol. xvi., I–Marbut. Pp. vi+1054. (Cambridge: At the University Press, 1918.) Price 5*l.* 5*s.* net.

WE congratulate the Royal Society on the fourth volume of the Author Catalogue of the scientific papers published during the seventeen years 1884–1900. The first volume (numbered vol. xiii. of the catalogue), containing a list of papers by authors whose names begin with the letters A and B, was published in June, 1914; the second volume, with authors' names from C to Fittig, in February, 1915; and the third volume (numbered vol. xv. of the catalogue), containing the author index to the end of H, in October, 1916. The volume now issued carries the indexing as far as the name Marbut. It is no light matter

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to have surmounted the difficulties in the production of a work of this magnitude under the conditions created by the war. Scientific workers will also recognise that the Cambridge University Press has carried out the printing with as great care and efficiency as was the case with volumes produced under more favourable conditions.

The earlier volumes were compiled and edited under the able direction of Dr. Herbert McLeod, whose zeal for accurate work is so well known. Since his retirement, in 1915, as director, Dr. McLeod has continued to help with advice as occasion demanded.

The post of chairman of the Committee of Publication was filled by Prof. Silvanus Thompson until his death. It will be agreed that no better chairman could have been found. The interest which Prof. Thompson took in the history of science and of scientific publications made it certain that he would spare no pains in ensuring that the Catalogue of Scientific Papers should be an accurate record.

The Author Catalogue, which has so far been published for names alphabetically arranged from A to Marbut, contains 222,428 titles of papers written by 39,088 authors, an average of about six papers to each author. We may perhaps assume that this number will be doubled before the end of the alphabet is reached. In that case about 450,000 papers will be indexed as published in the seventeen years 1884–1900, or about 27,000 a year. This number is, of course, only an average, being perhaps true for the year 1892. During the last twenty years there has been a great increase in the number of scientific workers and also in the number of journals in which they can publish the results of their researches, so that before the war broke out the annual output of scientific papers must have been at least twice 27,000. Reference to the volumes of the International Catalogue of Scientific Literature shows that in 1913 more than 60,000 scientific papers were published.

We may confidently look forward to the completion of this Author Catalogue. We hope that the Royal Society will also be able to finish the corresponding Subject Catalogue, in which the volumes for mathematics, mechanics, and physics have already appeared. Subject catalogues are so much more useful than author catalogues that it is very important that the publication of the remaining volumes of the series should not be too long delayed.

OUR BOOKSHELF.

A Medical Dictionary. By W. B. Drummond. Pp. ix+625. (London: J. M. Dent and Sons, Ltd., n.d.) Price 10*s.* 6*d.* net.

THIS new "Medical Dictionary" includes much more than its title may suggest, for, in addition to contents bearing closely on strictly medical subjects, we find articles dealing with subjects relating to health, such as athletics, ambulances (with a capital plate of ambulance wagons), cycling, diets, food, and cookery, health resorts, exercise, posture, psycho-analysis, sanitation, ventilation and warming, water supply, and a host of others. We have tested it and have failed to find any omission of moment.

The more special medical sections dealing with diseases give excellent summaries, including causation, symptoms, complications, treatment, and prevention. The principal tropical diseases, such as malaria, sleeping-sickness, cholera, dysentery, sprue, plague, and ankylostomiasis, have brief descriptions allotted to them. Conditions arising in connection with the war have not been omitted, and shell-shock, T.N.T. poisoning, trench-fever, trench-foot, and trench-nephritis are all alluded to. Venereal diseases are briefly dealt with, and their control by the State is discussed. Sections are devoted to anatomy and physiology, and all the commoner drugs are mentioned, their nature and dosage. Under bacteriology we find a brief description of the nature and classification of bacteria, of the part they play in Nature and how they are studied, of the germ-theory of disease, and notes on the principal disease-producing organisms, the whole being illustrated with three text-figures and two full-page plates of photomicrographs. Physical exercises are dealt with and are fully illustrated with four plates. Under drowning Schäfer's method of resuscitation rightly has the foremost place, other methods being also given. Under consumption a good account of the open-air treatment is given, with illustrations.

Sufficient has been said to show the wide and comprehensive scope of this dictionary. The author, Dr. Drummond, is fully alive to the danger of a book of this kind taking the place of the family doctor, and we think he has managed with considerable skill to avoid it. The dictionary should be of the greatest service to the layman as a book of reference on medical and cognate subjects, and to the nurse as a guide in cases of sickness, to the health visitor, minister, missionary, and others. R. T. H.

Medicinal Herbs and Poisonous Plants. By Dr. David Ellis. Pp. xi+179. (London: Blackie and Son, Ltd., 1918.) Price 2*s.* 6*d.* net.

DURING the past three or four years a good deal of interest has been taken in the collection and cultivation of medicinal plants, for the most part by persons who have not enjoyed a botanical training. As a consequence, a desire has been felt for information concerning the properties of medicinal herbs, the uses to which they are put, the means by which they may be identified, their commercial value, and so on. It is for persons thus interested that Dr. Ellis's work is intended; to make it more generally useful he has included certain poisonous plants that are not, or not at present, used medicinally. It may be said at once that his object has been attained. The descriptions of the individual plants are clear and free from undue technicalities; they are accompanied by instructive line-drawings and preceded by two short chapters dealing with the structure of flowers and the physiology of plants.

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